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ABSTRACT

The first purpose of this study was to investigate the use of home learning tasks by participants and nonparticipants of the Parent Education Follow Through Program (PEFTP) in Richmond, Virginia. The second purpose was to examine the relationship within the PEFTP sample between parents' use of home learning tasks and two areas of student achievement: reading and mathematics. A total of 48 PEFTP and 8 non-PEFTP parent/child dyads participated in the study; all child subjects had participated in kindergarten programs, were low-income first graders, and were of black ethnic background. Three measures were used to gather data: (1) an adapted version of the Levels of Use (LoU) Interview Instrument, (2) a Categorical Data Check Sheet, and (3) the Metropolitan Readiness Test. Findings indicated that PEFTP at the Richmond site had been generally successful in assisting the sample of PEFTP parents to teach their children at home. Evidence was found to support the theoretical positions of other researchers, who collectively depict change as a developmental process encompassing various stages of growth, a mutual adaptation process affecting both recipient and innovation, and an interdependent process influenced by other variables. Neither students' reading nor mathematics achievement was significantly related to LoU. However, results for LoU and reading achievement did indicate a need for further study. (Author/RH)

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Implementation Assessment of a Parent Involvement Program and the Relationship Between Level of Implementation and Child Achievement

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Implementation Assessment of a Parent Involvement Program and the Relationship Between Level of Implementation and Child Achievement

Abstract

One of the major objectives of the Parent Education Follow Through Program (PEFTP) is to assist parents to teach their children at home. This objective is implemented through weekly home visits by paraprofessionals, during which, home learning tasks that emphasize desirable teaching behaviors are demonstrated to parents, for them to use later with their children. This objective for PEFTP parents has not been measured in national Follow Through evaluations. Nor has it been documented in sponsor implementation studies that participating parents do use home learning tasks, and if so, that they use them as prescribed.

In this study, Levels of Use (LoU) of home learning tasks was explored for PEFTP and non-PEFTP parents, in addition to key process variables associated with the implementation of an innovation including methods of use, felt need, practical benefits, and renewal of the innovation. Also examined, was the relationship between LoU and student achievement in reading and mathematics for the sample of PEFTP parent-child dyads.

The study took place in the PEFTP in Richmond, Virginia and included 48 PEFTP and 8 non-PEFTP parent-child dyads as subjects. Parent subjects were selected on the basis of their children's eligibility. All of the child subjects had participated in kindergarten programs, were low income first graders, and of black ethnic background. In addition, PEFTP first graders had received 80% of their home visits scheduled during the

kindergarten year, while non-PEFTP first graders had not participated in a home visit program.

Three measurements were used to gather data: 1) an adapted version of the LoU Interview Instrumert, 2) a Categorical Data Check Sheet, and 3) the Metropolitan Readiness Test. Data from the first two measurements were collected during a taped interview with the parents. The LoU Interview Instrument provided an overall LoU rating for each parent and data pertaining to the process variables explored in this study. The Categorical Data Check Sheet served primarily as a data reduction method for information collected on the process variables and also provided demographic data on the subjects. The Metropolitan Readiness Test was administered locally and student achievement data for the two content areas were obtained from this source.

The LoU rating was obtained from two independent ratings of each LoU tape with intercoder reliability ranging from .63 to .90. Data regarding the process variables were analyzed according to selected change concepts while percentages of Ns for various LoU groups and categorical data were calculated. Two separate analyses of covariance were done to examine the relationship between LoU and student achievement in the two content areas.

This study provided evidence that the PEFTP at the Richmond site had been generally successful in assisting the sample of PEFTP parents to teach their children at home. The majority of PEFTP parents, as opposed to none of the non-PEFTP parents, were identified as users of the innovation. In addition, evidence was found to support the theoretical positions of other change researchers who collectively depict change as 1) a developmental process encompassing various stages of growth, 2) a mutual adaptation process in that changes occur in both the recipient and the innovation, and 3) an interdependent process that is influenced

by other process variables (e.g., felt need of the innovation; practical benefits received from direct experience with the innovation).

The study did not show a significant relationship between LoU and student achievement in reading (F [3,37] = 2.25, .05 < p < .10) nor for LoU and student achievement in mathematics (F [3,37] = 0.16, NS). The results for LoU and student achievement in reading, however, did indicate a need for further study.

Implementation Assessment of a Parent Involvement Program and the Relationship Between Level of Implementation and Child Achievement

Millions of dollars have been poured into early childhood compensatory educational programs These programs have been designed to improve the cognitive development of low income children with hopes that this would lead to increased chances at later adult life success. Project Headstart and Project Follow Through would be included among programs of this type. Both projects were comprehensive in nature and each utilized a variety of educational approaches to achieve program goals. Also, in both projects, parent and community involvement were considered important. National education studies of compensatory programs like Follow Through have focused mainly on child outcomes and have reported little data concerning the effectiveness of parent involvement (Emrick, Peterson, Agarwala-Rogers, Note 1; Emrick, Sorenson, & Stearns, Note 2; Stebbins, St. Pierre, Proper, Anderson, & Cerva, Note 3). This has been true even though there is evidence to suggest that parent involvement is an effective component of such programs (e. g., Henderson, 1981; Phi Delta Kappa, 1981). In addition, little consideration has been given by program evaluators to the emphasis that various program developers have placed on the parent in the intervention treatment. These two points are particularly relevant for those Follow Through models that have placed greater emphasis on parent involvement than on child achievement.

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One such Follow Through model which stresses parent involvement is the Parent Education Follow Through Program (PEFTP). The model was designed in 1968 by the late Dr. Ira Gordon. The PEFTP is distinctively different from most Follow Through models in that the parent, rather than the child, is the direct focus of the intervention treatment. Two major activities constitute implementation of the program, the home visit and the Policy Advisory Committee (Gordon, Note 4; Olmsted, Note 5). One of the major objectives of the home visit is to assist parents in more effectively teaching their children at home. This objective is implemented through weekly or biweekly home visits by paraprofessionals. During the home visits, home learning tasks that emphasize desirable teaching behaviors are demonstrated to parents for later use with their children.

In national Follow Through evaluations this major objective of the PEFTP home visit has not been assessed. Not has it been clearly documented in sponsor implementation studies that PEFTP parents do use home learning tasks, and if so, that they use them as prescribed. In addition, the relationship between parents' use of home learning tasks and their children's achievement has not been explored.

Based on the above perspectives, the purpose of this study was twofold. The first purpose was to investigate the implementation of home learning tasks by PEFTP and non-PEFTP parents in Richmond, Virginia. The second purpose was to examine the relationship within the PEFTP sample between parents' use of home learning tasks and two areas of student achievement, reading and mathemetics. The study consisted of two stages. In the first stage, the following research questions were investigated:

1) Is there a difference between PEFTP and non-PEFTP parents in terms

of parental use of home learning tasks?

2) What is the distribution of task usage for the sample of PEFTP parents?

3) How are home learning tasks presently used by PEFTP parents within the sample?

4) What is the preferred method of use of home learning tasks by PEFTP parents?

5) What are the perceptions of the sample of PEFTP parents with regard to home learning tasks in terms of the following social process variables:

a. felt need of home learning tasks,

b. practical benefit of home learning tasks, and

c. renewal of home learning tasks.

The second stage of the study called for a nonrandomized one-group pre-test-post-test design. For this stage of the study, pretest and post-test achievement data were collected for preassembled PEFTP first graders. These data, in addition to data collected (parents' use of home learning tasks) in the first stage of the study allowed for the examination of the relationship among the identified variables of interest. For this stage of the study, the following null hypotheses were formulated:

1) Within the PEFTP sample there is no significant relationship between parents' use of home learning tasks and student achievement in reading.

2) Within the PEFTP sample there is no significant relationship between parents' use of home learning tasks and student achievement in mathematics.

A study of this nature is important for several reasons. First, cross model evaluations of Follow Through at the national level have failed to measure the primary objectives of parent involvement models, such as the PEFTP.

Thus, changes in parent behaviors that may have occurred, have not been directly assessed.

Second, the PEFTP, like many compensatory education programs, was part of the sixties' movement which was to change the behavior of program participants. During this movement, countless educational innovations were designed, materials were developed, and implementation strategies were field tested. In addition, the innovations were implemented in various settings that included the home, parent centers, child centers, and schools scattered in sites across the nation. Human resources from mixed economic, paraprofessional, and professional backgrounds were also utilized to implement the goals of these various programs. Yet, the manner in which these and other variables might have influenced the outcome of national and sponsor evaluations of compensatory programs was not assessed.

Third, the lack of data on social process variables in studies on the diffusion of innovations has contributed little to the accumulation of knowledge in change research. As change research seeks to identify, define, and understand process variables associated with the adoption and use of innovations, process outcome studies are strongly advocated in change research literature (Eddy, 1975; Hall & Loucks, 1977; House, Glass, McLean & Walker, Note 6).

ASSESSMENT OF INNOVATIONS

Implementation Models

A review of change literature suggests that there are several approaches available for studying the implementation of an innovation. These approaches can generally be classified into two categories: the system approach and the individual approach, with variations found within each approach. The rationale for the system approach is that change in individual behavior is a result of interactions between individuals within a given system.

One system approach that has been useful for studying change is the community approach advocated by Kimball and Pearsall (1954). This approach is defined as being composed of all the separate systems in a given time and space for which interrelationships can be determined. Kimball and Pearsall (1954) suggest that each group consists of three components: 1) a relational system, 2) a system of customary behaviors, and 3) a system of values. They perceive each of these three components as interdependent components which support and modify each other, in addition to providing a conceptual framework by which all events may be viewed and understood.

The approach advocated by Kimball and Pearsall (1954) has traditionally been confined to ethnographic or qualitative studies conducted outside American society or within minority sub-cultures. This type of approach has been instrumental in studying the effects of process variables on human behavior in anthropology and sociology. In studies of this nature, ethnographic technique are used which consist of a variety of data, and data gathering techniques. Wilson (1977) states that this research is multimodal, and that the following are relevant kinds of data:

1) form and content of verbal interactions between participants,
2) form and content of verbal interaction with the researcher,
3) nonverbal behavior,
4) patterns of action and nonaction, and
5) traces, archival records, artifacts, and documents.

Data gathering techniques encompass participant observation, focused interviewing, nonfocused interviewing, and a review of pertinent written materials (Macoby & Macoby, 1954; Merton, Fiske, & Kimball, 1956; Wilson, 1977; Rutherford, Note 7). Recent trends in evaluation and implementation studies suggest, however, that the concepts and techniques of social scientists are

no longer confined to the fields of anthropology and sociology. Instead, these concepts and techniques are being applied to evaluate the quality of school life, educational products, as well as innovative school programs as evidenced by the works of Jackson (1968), Eddy (1975), and Wilson (1977). Studies of this nature have been helpful in understanding the relationships and interactions of individuals within a school setting. However, such studies do not provide sufficient information regarding the internalization of intended change among individuals.

The individual approach to studying change focuses on the study of individual behaviors. This approach operates under the assumption that the adoption of an idea or innovation is an independent act that may or may not be contingent upon other variables. Researchers who take this approach place varying degrees of emphasis on the individual and social process variables. Some researchers focus on the individual alone in the change process (e.g., Lionberger, 1960), whereas other researchers focus on groups of individuals and give little attention to social process variables (e.g., Carlson, 1965). In other models, attention is given to both the individual and process variables, but each is treated as isolated, rather than interdependent. An example of this type of model is the Concerns Based Adoption Model (CBAM) developed by Hall, Wallace, and Dorsett (1973).

CBAM has four major dimensions that have been identified by Hall et al. (1973) as significant variables in the change process. The dimensions are: 1) Levels of Use of Innovations (LoU), 2) Stages of Concern About Innovations, 3) Configurations, and 4) Interviews. For this discussion, only one dimension of the CBAM is perceived to be relevant, the LoU concept which focuses on measuring change in individual behaviors. The LoU concept describes behaviors exhibited by individuals from before any knowledge of the innovation

exists, through preparation to begin use, through development of skills and knowledge necessary for use to become routine, and finally through refinement, integration, and renewal with respect to use of the innovation (Hall & Loucks, 1977).

There are eight LoU's which include: 0-Nonuse, I-Orientation, II-Preparation, III-Mechanical Use, IVA-Routine, IVB-Refinement, V-Integration, and VI-Renewal. Each LoU is defined for each of seven categories regarding the user's knowledge and participation in activities that are characteristic of the innovation being studied. The seven categories delineated by Hall, Loucks, Rutherford, and Newlove (1975) include: Knowledge, Acquiring Information, Sharing, Assessing, Planning, Status Reporting, and Performing. In addition, decision points at each LoU distinguish the eight stages of developmental growth for intended innovation users. The purpose of such decision points was to increase the reliability in distinguishing between levels (Hall et al., 1975).

To measure LoU, "a focused interview" (Merton et al., 1956) is used that employs a branching format with specific questions and follow-up problems (Rutherford, Note 7, p. 9). The questions are drawn from a basic definition of the innovation to be measured including descriptive characteristics.

Whereas the LoU concept offers a useful formulation for documenting change in individual behaviors, this approach does not take into consideration the influence of other social process variables on the behaviors of the intended user. For example, the concerns that an individual expresses about an innovation are treated separately in another dimension of the CBAM, the Stages of Concern About Innovations. The isolation of these two dimensions when studying change in individual behaviors deemphasizes the interdependence of these variables in the change process. As several social process variables

have been documented in change research to influence the adoption and use of an innovation, more data on these variables need to be collected when investigating the LoU of an innovation. In addition, such data need to be treated collectively in order that a more comprehensive picture can be obtained about an individual's LoU of an innovation.

Social Process Variables

Several process variables have been identified by change researchers as influential in the adoption and use of an innovation. Niehoff (1966) has identified and operationally defined eight social process variables to be considered when investigating the implementation of an innovation. They are: communication by the innovator, participation obtained, utilization of local culture, presence of felt need among recipients, other motivational set, maintenance of the innovation, and flexibility of the change agent. The significance of several of these variables has been documented in implementation studies focusing on innovations.

Fliegel and Kivlin (1966) have documented that innovations perceived by recipients to be most economically rewarding and least risky were adopted more rapidly, while Doyle and Ponder (1977) have reported that teachers will adopt innovations that have practical value (congruent with classroom situations, provided with methods for implementation, and offering a return on time or money invested) and discard those perceived as impractical. In terms of the abandonment of innovation by recipients, Dearman (1977) reported that innovations most frequently abandoned were those that were complex, expensive, and difficult to administer in school programs such as flexible scheduling, programmed

instruction, and team teaching. Innovations that were retained most frequently by school personnel were simpler, less expensive, and easier to administer, such as simulation and gaming, independent study, and ethnic studies. Graves (1977) also has documented that smaller scaled innovations have a better chance to help students than larger, more intensive innovations.

Other key social process variables identified in the literature to influence innovation implementation were local forces, change facilitators, participation of recipients, and mutual adaptation of an innovation. Berman (1977) reported that while federal change agent politics have had a major effect in stimulating local districts to undertake projects consistent with federal guidelines, adoption of projects did not guarantee a successful implementation environment on long-run terms. Berman concluded that it was local forces (organizational climate and leadership, district management, district politics) that intervened to change proposed innovations, and in many cases, curtailed their continuation beyond the expiration date of federal funds.

Studying the adoption of 138 ESEA Title III proposals implemented in school systems, Sullivan (1977) reported one significant difference between institutionalized proposals and noninstitutionalized proposals; the number of categories of people participating in the development of the original proposal. Participation of more categories of people was positively associated with the institutionalization of the innovation. In their evaluation of the National Diffusion Network, Emrick, Peterson, and Agarwala-Rogers (Note 1) found evidence to support the key role of change agents in the successful implementation of an innovation.

In an earlier pilot study on the Richmond, VA, PEFTP, some evidence was found by Ellis (Note 8) that suggested that home learning tasks were used as homework or reinforcement-type activities by some program participants. This

finding was contrary to the PEFTP's implementation criteria for home learning tasks, as their design was intended by the model sponsor to be Piagetian in nature and used as fun-type activities. This change in home learning tasks was reported by program participants to result from the incorporation of the school's goals for the child; the teacher's goals; and parents' expectations, goals, life styles, and value systems into the development of home learning tasks. Changes in the home learning tasks were seemingly supported by the model sponsor in order to facilitate implementation of the tasks by local initiators.

The finding concerning home learning tasks in the PEFTP provided some support for an earlier finding of Frey (1977). Frey suggested that implementation of innovations is a bilateral event. That is, both the innovation and the user are altered. Two types of mutual adaptations were identified by Frey: those that were mixtures of and those that were actually different from the related program specifications and user practices. The conditions reported by Frey to result in mutual adaptations of innovations were the nondynamic features of the user's environment, other programs operated by users, emergent innovations, the incompleteness of the innovation, ramifications of other alternatives, and the evaluative judgement of the user.

METHODOLOGY

Subjects

The study took place in the PEFTP in Richmond, Virginia, and included PEFTP and non-PEFTP parent-child dyads as subjects with parent subjects selected on the basis of their children's eligibility. Only PEFTP first graders who met the following criteria were considered for subjects.

1) black ethnic background
2) previous enrollment in PEFTP kindergarten classes
3) parents received 80% of scheduled home visits during first grader's kindergarten academic school year, and

4) parents income level met low income guidelines as determined by Richmond's LEA Reduced Lunchroom Forms.

Non-PEFTP first graders were selected in terms of black ethnic background, participation in regular kindergarten classes, and low income status as defined also by Richmond's LEA Reduced Lunchroom Forms. In addition, the comparison group of first graders had not participated in a home visit program.

Based on selection criteria, 71 PEFTP first graders were eligible to participate in the study. Fifty PEFTP parent-child dyads were randomly selected as subjects. Seventy-two first graders from the comparison group met the selection criteria. From this number, 50 non-PEFTP parent child dyads were also randomly selected as subjects. It was assumed that non-PEFTP parents were nonusers of home learning tasks and to test this assumption, data were only collected from a randomly drawn sample of ten comparison parents.

None of the non-PEFTP parents contacted refused to participate in the study which resulted in a 100% participation rate. Seventy percent of the PEFTP sample contacted agreed to participate in the study. The rate of nonparticipation was determined by the eligible number of total parent contacts versus the number of obtained participants. The reasons reported for nonparticipation included relocation of families, unpublished telephone numbers, parent unwillingness, illness, and work schedule conflicts. The entire roster of eligible PEFTP parent-child dyads had to be exhausted in order to obtain the desired number of subjects.

Following data collection, two PEFTP parent-child dyads were eliminated from the study. These eliminations were based on insufficient achievement data for one child and the ineligibility of a second child due to family income. These eliminations reduced the actual sample size of 50 to 48 PEFTP parent-child dyads.

In the sample of 10 non-PEFTP parent-child dyads, two dyads were also eliminated from the study. Within this sample, one parent was found to be a past PEFTP parent with an older sibling, while the other parent was identified as a PEFTP parent with an older sibling currently enrolled in the program. Consequently, eight of the initial ten non-PEFTP sample actually served as subjects in the first stage of the study.

Instruments

In the collection of data for stage one, measurements were obtained from two sources: an adapted version of the Levels of Use (LoU) Interview Instrument and a Categorical Data Check Sheet. Three adjustments were made in the LoU Interview Instrument. The first adjustment expanded the LoU interview to assess the perceptions or feelings of subjects regarding the four social process variables investigated in this study. This adjustment was made in recognition of the limitations of the LoU interview concept to measure and interpret changes in individual behaviors within the context of other social process variables.

The second adjustment to the LoU Interview Instrument involved the generation of specific questions for each category and LoU stage followed by the development of probe cues. In addition to focused questions, nonfocused questions were also used. The third adjustment to the LoU Interview Instrument concerned the format. Rather than employing a branching format to conduct the interview, each category of information was completed, prior to proceeding with the next category of information. Both the second and third adjustments were made to ensure the generation of sufficient data for obtaining a LoU rating for each parent subject.

Prior to making final adjustments to the LoU Interview Instrument, a pilot test of the instrument was conducted in the Richmond PEFTP with five PEFTP parents and one non-PEFTP parent. The results indicated that the instrument was functional

and that an overall LoU rating could readily be obtained.

The Categorical Data Check Sheet was primarily designed to serve as a method of data reduction for information collected during the LoU interview. Such data included PEFTP parents' current and preferred methods of task usage (fun-type, homework-type, both fun-type and homework-type), three social process variables (felt need, practical benefits, and renewal), and user behaviors (use and nonuse of home learning tasks).

In carrying out the second stage of the study, data were obtained from two sources: the LoU Interview Instrument and the Metropolitan Readiness Test. The LoU Interview Instrument provided a LoU rating for each parent subject in order that the relationship between this variable and student achievement could be examined. The 1976 edition of the Metropolitan Readiness Test (Nurss & McGauvran, 1976) was used to measure the reading and mathematics achievement of first grade subjects.

Procedure

Interviews with parent subjects took place in a variety of settings which included five local schools, the homes of subjects, the central office administration building, and places of employment. One hour was allotted for each interview. For PEFTP parents the interview ranged from 35 to 45 minutes, while the length of the interview ranged from 5 to 10 minutes with non-PEFTP parents.

Prior to beginning the taped portion of the interview with parents, a brief rapport building session took place. During the interview, the investigator attempted to find out if the subjects were users of home learning tasks. In the case of nonusers, questions were asked to determine what knowledge and understanding of the PEFTP they had, and whether or not they were users of home learning tasks. For those who were users, the investigator attempted to determine

how they were using the tasks at the time of the interview, what recent changes they had made in their use, if any, what plans they had regarding the tasks, and to what extent they were collaborating with others in use of home learning tasks. This information coupled with data characteristic of the implementation of home learning tasks made it possible to assign an overall LoU rating.

At the completion of the LoU interview, parent subjects were asked questions based on the outline of the Categorical Data Check Sheet. The responses of subjects were tape recorded and also checked on the Categorical Data Check Sheet. When responses had been checked, the interview was terminated and parent subjects were thanked for their participation in the study.

During a two week period, one independent coder was trained by the investigator to code the interview tapes. Using the LoU Chart conceptual framework as a guide, the investigator and the independent coder listened to the tapes independently and obtained a LoU rating for each subject through use of a Frequency of Response Check Sheet. The latter served as a check sheet for recording responses of parent subjects across LoU and categories of information. Overall LoU was determined by the consistency of a specific LoU stage across all categories of data. When consistencies were not so evident, the subject was rated at the next lower LoU stage to determine overall LoU (Loucks et al., 1975). Training of the independent coder was carried out until an intercoder reliability of at least .80 was obtained. An additional intercoder reliability check was made at the completion of the coding of all LoU tapes (n=60) and the correlation between the two raters was .90.

RESULTS AND DISCUSSION

Stage One

The results are presented with reference to the five research questions investigated in the first stage of the study. Questions #1-2, revolve generally

around the implementation of home learning tasks for parent subjects. Questions #3-5 focus more specifically on social process variables identified in change research as influential variables in the adoption of an innovation.

The results for Questions #1-2 are disucssed in terms of the conceptual framework presented by Hall and Loucks (1977). In a similar manner, the discussion of questions #3-5 is based on the implementation criteria of the PEFTP. Where discrepancies of import occur, interpretations of the discrepancies are drawn from the theoretical frameworks of change researchers.

Question #1

Basically, the first research question focused on the use and nonuse of home learning tasks by PEFTP and non-PEFTP parents. (To be rated as a user, the subject must have used the innovation within three months prior to data collection.) This question was generated to test the assumptions that 1) PEFTP parents use home learning tasks, and 2) non-PEFTP parents do not use home learning tasks. The results for this question indicate that 88% of the sample of PEFTP parents are users of home learning tasks. Simultaneously, 12% of the PEFTP parents are nonusers of home learning tasks, as are 100% of the non-PEFTP parents.

The results obtained for PEFTP parents identified as nonusers support the assumption that the adoption of an innovation by a school system, a school, or a classroom does not provide bonafide evidence that the innovation is used by intended recipients (Hall & Loucks, 1977). As shown in this study, the only way to know for sure whether an innovation is being used is to document its usage among intended recipients (Hall & Loucks, 1977).

On the other hand, the obtained results for non-PEFTP parents were expected as home learning tasks are primarily implemented in the home rather than the classroom. Hence, the diffusion of home learning tasks in the homes of non-PEFTP

parents was less likely to occur. This is due primarily to non-PEFTP parents' lack of nearness to technical assistance (home visit by parent educator) in exposure to and/or demonstration of task usage (Rogers & Shoemaker, 1971).

Question #2

The second research question explored the LoU distribution among PEFTP parents regarding use of home learning tasks. It was assumed that within the PEFTP sample that parents functioned at different developmental stages of usage, with some parents functioning at lower or higher developmental levels than others. The results presented in Table 1 support this assumption for PEFTP users and indicate that some parents are functioning at each user LoU stage (defined as LoU III - LoU VI). The highest concentration of parents is found at LoU IVB - Refinement (37%), followed by LoU IVA - Routine (16%), and LoU III - Mechanical (14%). Six percent of the parents are found at the highest LoU that could be obtained (LoU VI - Renewal). These results provide further evidence in support of the LoU concept in which it is proposed that the adoption of an innovation is a developmental phenomenon (Hall, Wallace, & Dorsett, 1973).

Questions #3 and 4

These two questions revolve around the adaptation of an innovation by local initiators and intended recipients which deal with how an innovation is intended to be used by a model sponsor, how it is used by local initiators, and how it is preferred to be used by the recipients of the innovation. The questions are an outgrowth of an earlier pilot study conducted by the investigator (Ellis, Note 8) on the PEFTP in the Richmond Community.

Intended method of use. According to Gordon (Note 4), home learning tasks in the PEFTP were originally designed to be used as fun-type activities versus reinforcement or homework-type activities. In addition, content emphasis was placed on abstract learning experiences rather than learning experiences directly

Table 1

Level of Use Groups

for PEFTP parents

Levels of use	n[a]	Adjusted PEFTP parent groups
0: Nonuse	6	
I: Orientation	0	Group A
II: Preparation	0	(0, I, & II)[b]
III: Mechanical	7	Group B
IV A: Routine	8	(III & IV A)[b]
IV B: Refinement	18	Group C (IV B)[b]
V: Integration	6	Group D
VI: Renewal	3	(V & VI)[b]

Note. Total n = 48 PEFTP parents.

[a]Numbers in column two indicate the number of PEFTP parents for each Level of Use.

[b]Numerals in parentheses indicate the combined Levels of Use for Groups A, B, & D, and the same Level of Use for Group C.

related to PEFTP classroom activities. However, one of the major findings of the pilot study revealed that the intended method of home learning tasks by the mode' sponsor had been altered by 'ocal initiators to facilitate implementation of the innovation. The alterations focused on the design, in which home learning tasks were designed as both fun-type and homework-type activities.

Current methods of use. At the time of this study, 90% of the sample of PEFTP parents are using home learning tasks as a combination of both fun-type and homework-type activities. The remaining 10% of the sample are evenly divided in their method of use, with 5% reporting a fun-type method, and the other 5% reporting a homework-type method.

These results lend further support to a pilot finding of Ellis (Note 8), in addition to that of Frey (1977), which supports the implementation of an innovation as a bilateral event. In this case, home learning tasks were altered by local initiators to incorporate the values of program parents in general, as well as the "back to basics" movement advocated by the Richmond LEA (Ellis, Note 8). Simultaneously the behaviors of program parents had also been altered, as 88% of the sample of PEFTP parents were current users of home learning tasks.

Preferred methods of use. It is interesting to note that 48% of the PEFTP parents preferred the method of task usage (fun-type) that was intended by the model sponsor. To the contrary, 45% of the sample of PEFTP parents preferred a method (homework-type) that was not advocated by the model sponsor nor totally supported by local initiators. Only 7% of the sample of PEFTP parents supported task usage as currently designed by local initiators.

An interpretation of parents' reasons for preferred method of use appears to be based on the value systems of how each parent perceives learning. As can

be seen, the value systems held by parents differ in various degrees from each other, from those imposed by local initiators and from those originally imposed by the model sponsor. Therefore, it would be misleading to assume that an innovation is used as intended without prior documentation of how it is used. It would be equally misleading for model sponsors and local initiators to assume that the intended and current method of use of an innovation is the preferred method of use by all the recipients. Finally, it would also be misleading for program evaluators (e.g., Stebbins et al., Note 3) to attribute the success or failure of an innovation to the prescribed treatment, when in reality the treatment may not have been implemented, or implemented as prescribed.

Question #5

This question was posed to examine three social process variables associated with the implementation of an innovation. These process variables included felt need, practical benefits, and renewal of home learning tasks.

Felt need of home learning tasks. This variable refers to a need recognized by the recipients as a consequence of their own wants and values, not those of the innovator (Niehoff, 1966). In terms of this variable, all PEFTP parents indicated that they presently feel a need for the use of home learning tasks. This need seemingly resulted as a consequence of task usage, which subsequently provided PEFTP parents opportunities to discover the benefits of such usage. It is suspected that technical maintenance of the home visit in the PEFTP played a key role in the presence of parents felt need for home learning tasks.

As 87% of the sample of PEFTP parents indicated that this need was not evident prior to their involvement with the use of home learning tasks, this need was identified as latent. That is, prior to the implementation of home learning tasks most parents were aware of a need to teach their children at home.

However, without supportive services of outside change agents, their efforts to do so, were inconsistent, fragmented, and/or uncoordinated between the home and school. In this sense, the PEFTP sponsor assisted local parents in formulating a solution to teach their children at home.

Practical benefits of home learning tasks. This variable may be defined as an advantage perceived by the recipients that produces a practical benefit (Niehoff, 1966). The key to this motivational set is that it is perceived by the recipients. As evidenced by the results reported for this process variable, PEFTP parents do perceive the usage of home learning tasks as advantageous. Ninety-three percent of the sample of PEFTP parents perceived usage of home learning tasks as educationally rewarding. This result produced a high level of congruence between program parents' perceptions and the expectations of the model sponsor.

One interesting side effect of task usage was the practical benefit identified by PEFTP parents. Seventy-three percent of the parents cited parental involvement as a perceived benefit of task usage. It was earlier suspected that economic (19%) and convenience (8%) benefits would have been more frequently cited as practical benefits. This assumption was based on pilot findings (Ellis, Note 8) which indicated that PEFTP parents in general perceived some aspects of the program to be economically rewarding (e.g., dental care and medical care), and that the home visit was a convenient method of implementing the program.

However, the majority (81%) of the parent sample did not perceive home learning tasks to be economically rewarding, nor the implementation of them as a practical benefit (8%). The latter may be due to the fact that the home visit was an expected event by parents, whereas, the development of a meaningful relationship with their children was not initially anticipated as a consequence of task usage. Therefore, when parent involvement did occur as

a derivative of task usage, its benefit, perhaps, was more easily recognized by parents as they had not expected this side effect.

Renewal of home learning tasks. The results of this question were noteworthy as PEFTP parents were 100% in favor of continued maintenance of home learning tasks in the PEFTP. While there were parents who expressed concerns regarding the need for improvements in the use of home learning tasks by individuals and local initiators, the concerns focused on task improvements, rather than discontinued use of the innovation. This finding, in conjunction with the high percentage of users (88%), suggest that local initiators have been overall successful in assisting the recipients of home learning tasks to integrate use of the innovation in their patterns of teaching behaviors.

Stage Two

The results for stage two revolve around a descriptive report of the two null hypotheses investigated. For immediate reference, the null hypotheses are restated:

1) Within the PEFTP sample, there is no significant relationship between parents' LoU of home learning tasks and student achievement in reading.

2) Within the PEFTP sample, there is no significant relationship between parents' LoU of home learning tasks and student achievement in mathematics.

Prior to the statistical treatment of the two null hypotheses, the initial LoU groups for PEFTP parents were reclassified into four LoU groups: A, B, C, and D. In Table 1 is shown the initial and adjusted LoU distribution. It can be argued that such a reclassification of LoU groups involves a certain amount of risk in error. However, this reclassification can be supported in several ways. First, using the small N's obtained in the distribution of

several LoU groups for PEFTP parents would have greatly reduced the power of the statistical analyses. Thus, the presence or absence of subtle differences would not have been readily detected.

Second, limitations in the LoU interview itself to classify individuals into precise categories was recognized. Since the majority of discrepancies in LoU ratings between the investigator and the independent rater were only one level apart, it was assumed that LoU's separated by only one developmental level could be combined with a minimum risk of error involved. This assumption was also indicated by Loucks et al. (1975) in the LoU Manual. It was suggested that when a rating decision had to be made between two levels, that the individual in question should be rated at the lower level.

Data reported for LoU, in conjunction with the comparison of student achievement in the two content areas are based on the four reclassified groups: A, B, C, and D. Separate analyses of covariance were done for null hypotheses one and two, using fall test scores as the covariate to adjust for initial differences. The means and standard deviations obtained for the four LoU parent groups and student achievement in reading are reported in Table 2, and for mathematics achievement in Table 3.

As can be seen in Table 2, Group A (Nonusers), Group B (Mechanical-Routine), and Group C (Refinement) have similar means for student achievement in reading, with the scores for Group D (Integration-Renewal) being 3 to 4 points higher than the former three groups. Variability of scores is smallest for Group B, followed by Group D, and nearly the same for Groups A and B. Table 3, indicates that the mean student achievement scores in mathematics are approximately the same for the four groups. Among the four groups, variance of mathematics scores within the groups ranged from approximately 3 to 4 points, as evidenced by the standard deviations.

Table 2

Means and Standard Deviations of Reading Achievement Scores for Children of PEFTP Parents in the Four Level of Use Groups

Level of use groups	Reading achievement		
	n	$\bar{x}$	SD
Group A: Nonuse	6	62.17	7.52
Group B: Mechanical - Routine	15	61.13	5.57
Group C: Refinement	18	61.94	7.59
Group D: Integration - Renewal	9	65.11	6.13

Table 3

Means and Standard Deviations of Mathematics Achievement Scores for Children of PEFTP Parents in the Four Level of Use Groups

Level of use groups	Mathematics achievement		
	n	$\bar{x}$	SD
Group A: Nonuse	6	19.00	3.41
Group B: Mechanical - Routine	15	19.47	2.88
Group C: Refinement	18	18.94	4.05
Group D: Integration - Renewal	9	19.18	2.99

Two analyses of covariance were done, one between LoU and student achievement in reading and one between LoU and student achievement in mathematics to test the significance of the slight differences detected among the means for LoU and the two content areas. The F test was applied to the parallel analyses at the .05 level of significance. A summary of the results for LoU and student achievement in reading is presented in Table 4 while for mathematics achievement and LoU, the results are presented in Table 5. As can be seen in Table 4, the results for the four groups indicated that the differences detected in student achievement for reading were not significant at the .05 level ($F\,[3,37] = 2.25$, $.05 < p < .10$). That is, the mean differences detected were indicated to be no greater than would be expected by chance. Therefore, null hypothesis #1 cannot be rejected.

As with the F value associated with null hypothesis #1, the obtained F value for null hypothesis #2 (LoU and student achievement in mathematics) was also found to be nonsignificant ($F_{3,37} = 0.16$, NS). Consequently, the statistical test did not result in a significant F value and null hypothesis #2 must also be accepted.

While the relationship between LoU and student achievement in reading did not reach statistical significance, there did appear to be educational meaningfulness. As evidenced by the group means and standard deviations presented in Table 2, Group D (Integration-Renewal) were higher than those for Groups A, B, and C. This difference seemingly suggests that for use of an innovation like home learning tasks, parents may need to function at LoU V - Integration and LoU VI - Renewal. Collectively, these two LoU's focus on user behaviors that involve collaboration with others in use of the innovation and modification of the innovation to impact on the learners. In the initial LoU distribution, this group of parents comprised the smallest percent of users.

Table 4

Summary of the Analysis of Covariance for Levels of Use and Reading Achievement Data for PEFTP Parent-Child Dyads

Source of variation	SS	df	MS	F
Levels of use	92.8284	3	30.9428	2.25*
Pretest reading	1404.1285	1	1404.1285	

*$.05 < p < .10$

Table 5

Summary of the Analysis of Covariance for Levels of Use and Mathematics Achievement Data for PEFTP Parent-Child Dyads

Source of variation	SS	df	MS	F
Levels of use	2.3169	3	0.7723	0.6*
Pretest mathematics	311.4377	1	311.4377	

*Nonsignificant

The educational meaningfulness found in the relationship between LoU and reading achievement, versus the lack of such difference for LoU and mathematics achievement, was not anticipated. In describing the nature and method of task usage in the LoU Interview, parents frequently described methods of use for home learning tasks that were math oriented. The emphasis placed on math oriented tasks suggested that parents might have used these tasks more so than others. Hence, if educational meaningfulness of differences was to be found, the differences would have been expected to be the reverse of what was found.

Recognizing that there are many possible explanations for why statistical significance was not obtained for the two null hypothesized relationships, only those that may have been of major import in this study will be mentioned. First, if the .10 level of statistical significance had been used, the educational meaningfulness found for LoU and reading achievement would have reached statistical significance. While this probability level is less stringent than those traditionally used, it would have been less likely for the investigator to conclude that there was no relationship between the variables in question, when possibly there might have been. In avoiding the risk of such an error, it has been suggested in the literature that any result that is between the .01 level and the .10 level should lead to a state of suspended judgments, which demands repetition of the study and verification of other researchers (Guilford & Frutcher, 1966).

Second, the investigation of methods of use of home learning tasks indicated that discrepancies in the value systems among the recipients, local initiators, and the model sponsor existed. The discrepancies revolved around the issue of intended method of use, current method of use, and preferred method of use of home learning tasks. In terms of the discrepancies found

between current method of use and the preferred method of use, the detected differences were large enough to have possibly influenced the quality of parental use of the home learning tasks.

Third, the concerns addressed by parents in the study regarding task improvements in terms of individualization of the tasks, periodic task evaluation, and coordination of task usage between the home and school, are all factors that could have possible influenced the outcome of the study. One final factor that might have contributed to the lack of statistical significance for the two null hypotheses was the small N's in the LoU distribution.

Implications for Future Research

The results of the study suggest that there are several implications for research on the diffusion of innovations. First, stage one results generally indicated that a singular change concept is limited in its ability to totally capture the change process among individuals in a given system. This was evidenced by the support found in part for each of the two change concepts (system and individual approach) and process variables (felt need, practical benefits, renewal) incorporated into the methodology of this study. From this perspective, it is suggested that when measuring change, an eclectic approach be used in which the strengths from available change concepts are drawn and incorporated into the methodology of the study.

Second, the LoU concept is not without limitations, but this concept has merit, particularly for smaller scaled programs (e.g., Follow Through models) that have been adopted by more than one site. By applying the LoU concept to a specific program, major objectives of the program can thus be measured. Site comparisons of the program then become more feasible, in that program effectiveness can be determined according to whether or not the major

objectives of the program were met at each site.

A second implication of the LoU concept appears to be determining at which LoU stage users of an innovation need to function in a "teacher-learner" situation in order to impact on the learner. Hall and Loucks (1977) suggest that the optimum stage of LoU may vary depending upon the intended objectives of the program developer. However, if the overall intent of the program developer is to increase impact on the learner in a teacher-learner situation, then the user of the innovation may need to function at the Integration (LoU V) and Renewal (LoU VI) stage of LoU, as evidenced by stage two results for PEFTP parent-child dyads. Further research is needed in this area to determine the effects of different LoU stages on learner outcomes.

A final implication of the LoU concept concerns the need for the collection of additional data on key social process variables when investigating LoU of an innovation. This suggestion is based on the fact that the LoU concept only reveals what an individual is doing or not doing with respect to an innovation. It does not allow for the examination of other process variables that may have influenced the individual's behaviors. For example, in this study, parents' felt need for home learning tasks, technical maintenance provided, and practical benefits received from task usage, all appeared to have been influential in parents' use of the innovation.

In terms of the results obtained for the null hypotheses in stage two, replication of this study is encouraged prior to concluding that there is no relationship between LoU and student achievement. It is also suggested that a more representative sample of subjects be included and that a less stringent level of statistical significance be applied to treatment of the data.

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